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Carroll et al.

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[54] **THREE-DIMENSIONAL PROTECTIVE INTERLOCK APPARATUS**

[75] Inventors: **Arthur B. Carroll**, St. Joseph, Fla.; **Vladeta D. Lazarevich**, Bondville; **Mark R. Gardner**, Champaign, both of Ill.

[73] Assignee: **Carroll Manufacturing Corporation**, Champaign, Ill.

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Related U.S. Application Data

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[52] **U.S. Cl.** **250/221**; 340/556

[58] **Field of Search** ..... 250/221, 222 R; 340/555, 556, 557

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Primary Examiner—David C. Nelms

Attorney, Agent, or Firm—Hill, Van Santen, Steadman, Chiara & Simpson

[57] **ABSTRACT**

A photoelectric touch input panel has a plurality of crossed light beams which are broken by an object, the position coordinates of which are identified as outputs. Two spaced apart beam surfaces are provided, and the interrelationship between the beams in the two planes is employed to distinguish between interrupting objects on the basis of their size, attitude, and velocity characteristics. The number of beams broken in any beam plane is counted to determine the relative size of the object, or to determine the center line of the interrupting object. The beams in any beam plane are selected in accordance with the relative significance of the various beams, and interrupted beams are pulsed more rapidly than non-interrupted beams. The light-emitting devices of the various beam planes are constructed as an integral unit. The control system of the touch input panel is adapted for use in monitoring the size, shape, and activity of objects within a space defined by plural beam planes, independently of the touch input level.

8 Claims, 12 Drawing Figures